

CLAIMS

What is claimed is:

- 1 1. An apparatus for retrieving Permanent Virtual Channel (PVC) configuration
2 information from a network device coupled to the apparatus, wherein the PVC
3 configuration information specifies one or more PVCs defined for the network
4 device, the apparatus comprising:
5 a PVC configuration parameter storage means having a first input for receiving the
6 PVC configuration information, the PVC configuration parameter storage
7 means for storing at least a portion of said PVC configuration information
8 and providing a portion of said PVC configuration information at an output;
9 request generator means for generating and providing to an output at least one
10 request for PVC configuration information for at least one logical interface,
11 wherein each PVC is uniquely identified by a Virtual Path Identifier (VPI)
12 and a Virtual Channel Identifier (VCI), the request generator means being
13 configured to:
14 if the VPI and VCI for a particular PVC are known, generate an ILMI
15 getrequest command that includes the known VPI and VCI for the
16 particular PVC, and
17 if the VPI and VCI for a particular PVC are not known, generate an ILMI getnext
18 command that includes a specified VPI and a specified VCI that indicate
19 that the VPI and VCI for a particular PVC are not known;
20 a network protocol adapter means having an input coupled to the request generator
21 means output for receiving the at least one request for PVC configuration

22 information and providing at an input/output logically configured into the at
23 least one logical interface and coupled to the network device at least one
24 message responsive to the at least one request for PVC configuration
25 information, and for receiving at the first input/output at least one message
26 from the network device and generating and providing at an output, on the
27 network protocol adaptor means, at least one message comprising the PVC
28 configuration information responsive to at least one of the messages from the
29 network device received at the network protocol adaptor means input/output;
30 a response receiver means having
31 first input coupled to the network protocol adaptor means output for
32 receiving the PVC configuration information from the network protocol
33 adaptor means;
34 a first output coupled to the PVC configuration parameter storage means input;
35 a second output coupled to the request generator means,
36 second input operatively coupled to receive an indicator responsive to an
37 interruption in transmission between the apparatus and the network
38 device;
39 a deleter means having an input coupled to the second input of the response receiver
40 means and an output coupled to the first output of the response receiver
41 means;
42 wherein the response receiver means is configured to provide to the first output of
43 the response receiver means at least a portion of the PVC configuration
44 information received at the response receiver means first input in response to

45 an identifier contained in the message received at the response receiver
46 means first input from the network protocol adaptor means;
47 wherein the response receiver means is further configured to extract VPIs and VCIs
48 from the PVC configuration information and provide the VPIs and VCIs to
49 the request generator means to be used by the request generator means to
50 generate subsequent ILMI requests;
51 wherein the response receiver means is further configured to generate identification
52 data that indicates that the at least a portion of the PVC configuration
53 information was received from the network device; and
54 wherein the deleter means is configured to cause, based upon the identification data
55 and receipt of the indicator at the input of the deleter means, the at least a
56 portion of the PVC configuration information to be selectively deleted from
57 the PVC configuration parameter storage means.

1 2. The apparatus of Claim 1, wherein the network protocol adapter means comprises a
2 segmenter and reassembler means having a first input/output coupled to the input of
3 the network protocol adapter means for receiving at least one of the requests for PVC
4 configuration information and to the output of the network protocol adapter means,
5 the segmenter and reassembler means for:
6 generating and providing at a second input/output coupled to the network protocol
7 adapter means input/output at least one ATM cell responsive to at least one of
8 the requests for PVC configuration information received at the segmenter and
9 reassembler means first input/output;-and

10 receiving at the second input/output at least one of the messages received from the
11 network device and providing at the first input/output coupled to the network
12 protocol adapter means output at least one message responsive to at least one
13 of said messages received from the network device.

1 3. The apparatus of claim 2, wherein the network protocol adapter means additionally
2 comprises a message protocol adapter means for:
3 receiving at an input coupled to the request generator means output at least one of the
4 requests for PVC configuration information from the request generator means
5 and providing at first input/output coupled to the segmenter and reassembler
6 first input/output at least one SNMP command responsive to at least one of
7 said requests for PVC configuration information; and
8 receiving at a second input/output coupled to the segmenter and reassembler second
9 input/output at least one message responsive to at least one of the messages
10 received from the network device and providing at an output at least a portion
11 of the PVC configuration information of said message.

1 4. The apparatus of claim 1, wherein the request generator means has an input
2 operatively couple to receive a status message and wherein the ILMI getnext
3 command is responsive to the status message.

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1 5. The apparatus of claim 1, wherein at least one set of the VPIs and VCIs received
2 at the response receiver first input comprise an SNMP trap

1 6. An apparatus for retrieving Permanent Virtual Circuit (PVC) configuration
2 information from a network device in a communications network, wherein the
3 PVC configuration information specifies one or more PVCs defined for the
4 network device, the apparatus comprising:
5 a request generator configured to generate and provide to the network device
6 a request for PVC configuration information stored in the network device;
7 a physical interface logically configured into a logical main interface and a
8 plurality of logical sub-interfaces, the physical interface being configured
9 to receive a message containing both the PVC configuration information
10 stored in the network device and a Virtual Path Identifier (VPI), wherein
11 the VPI and a VCI uniquely identify a PVC associated with the PVC
12 configuration information;
13 a comparator configured to compare the VPI from the message to a first
14 logical sub-interface number of a first logical sub-interface from the
15 plurality of logical sub-interfaces; and
16 if the VPI from the message matches the first logical sub-interface number of the
17 first logical sub-interface, then cause the PVC configuration information
18 from the message to be selectively stored into a first portion of a PVC
19 configuration information storage that is designated for the first logical
20 sub-interface; and
21 if the VPI from the message does not match the first logical sub-interface number
22 of the first logical sub-interface, then cause the PVC configuration

23 information from the message to be selectively stored into a second
24 portion of the PVC configuration information storage that is designated for
25 the logical main interface.

1 7. The apparatus as recited in Claim 6, wherein the comparator is further configured
2 to if the VPI from the message does not match the first logical sub-interface
3 number of the first logical sub-interface, then
4 compare the VPI from the message to a second logical sub-interface number of a
5 second logical sub-interface from the plurality of logical sub-interfaces;
6 and
7 if the VPI from the message matches the second logical sub-interface number of
8 the second logical sub-interface, then cause the PVC configuration
9 information from the message to be selectively stored into a second
10 portion of the PVC configuration information storage that is designated for
11 the second logical sub-interface.

1 8. The apparatus as recited in Claim 6, wherein:
2 the request generator is further configured to generate and provide to the network
3 device a second request for PVC configuration information stored in the
4 network device;
5 the physical interface is further configured to receive a second message
6 containing both updated PVC configuration information stored in the
7 network device and the VPI;

8 the comparator is further configured to
9 compare the VPI from the second message to the first logical sub-interface
10 number of the first logical sub-interface from the plurality of logical sub-
11 interfaces; and
12 if the VPI from the second message matches the first logical sub-interface number
13 of the first logical sub-interface, then cause the updated PVC
14 configuration information from the second message to be selectively
15 stored into the first portion of a PVC configuration information storage
16 that is designated for the first logical sub-interface in a manner that
17 indicates that the updated PVC configuration information is the most
18 recent PVC configuration information for the first logical sub-interface
19 received from the network device.

1 9. The apparatus as recited in Claim 6, wherein the request generator is further
2 configured to:
3 format the request for PVC configuration information stored in the network
4 device into a request in a first format for PVC configuration information
5 stored in the network device; and
6 segment the request in the first format into a plurality of formatted request
7 segments.

1 10. The apparatus as recited in Claim 9, wherein the first format is SNMP.

- 1 11. The apparatus as recited in Claim 9, wherein the first format is AAL5.
- 1 12. The apparatus as recited in Claim 9, wherein at least one of the plurality of
2 formatted request segments comprises an ATM cell.
- 1 13. The apparatus as recited in Claim 6, wherein the request includes an ILMI
2 getrequest command in SNMP format.
- 1 14. The apparatus as recited in Claim 6, wherein the request includes an ILMI getnext
2 command in SNMP format
- 1 15. An apparatus for retrieving Permanent Virtual Circuit (PVC) configuration
2 information from a network device in a communications network, wherein the
3 PVC configuration information specifies one or more PVCs defined for the
4 network device, the apparatus comprising:
5 a request generator means configured to generate and provide to the network
6 device a request for PVC configuration information stored in the network
7 device;
8 a physical interface means logically configured into a logical main interface and a
9 plurality of logical sub-interfaces, the physical interface means being
10 configured to receive a message containing both the PVC configuration
11 information stored in the network device and a Virtual Path Identifier

12 (VPI), wherein the VPI and a VCI uniquely identify a PVC associated
13 with the PVC configuration information;
14 a comparator means configured to compare the VPI from the message to a first
15 logical sub-interface number of a first logical sub-interface from the
16 plurality of logical sub-interfaces; and
17 if the VPI from the message matches the first logical sub-interface number of the
18 first logical sub-interface, then cause the PVC configuration information
19 from the message to be selectively stored into a first portion of a PVC
20 configuration information storage means that is designated for the first
21 logical sub-interface; and
22 if the VPI from the message does not match the first logical sub-interface number
23 of the first logical sub-interface, then cause the PVC configuration
24 information from the message to be selectively stored into a second
25 portion of the PVC configuration information storage means that is
26 designated for the logical main interface means.

1 16. The apparatus as recited in Claim 15, wherein the comparator means is further
2 configured to if the VPI from the message does not match the first logical sub-
3 interface number of the first logical sub-interface, then
4 compare the VPI from the message to a second logical sub-interface number of a
5 second logical sub-interface from the plurality of logical sub-interfaces;
6 and

7 if the VPI from the message matches the second logical sub-interface number of
8 the second logical sub-interface, then cause the PVC configuration
9 information from the message to be selectively stored into a second
10 portion of the PVC configuration information storage means that is
11 designated for the second logical sub-interface.

1 17. The apparatus as recited in Claim 15, wherein:

2 the request generator means is further configured to generate and provide to the
3 network device a second request for PVC configuration information stored
4 in the network device;

5 the physical interface means is further configured to receive a second message
6 containing both updated PVC configuration information stored in the
7 network device and the VPI;

8 the comparator means is further configured to compare the VPI from the second
9 message to the first logical sub-interface number of the first logical sub-
10 interface from the plurality of logical sub-interfaces; and

11 if the VPI from the second message matches the first logical sub-interface number
12 of the first logical sub-interface, then cause the updated PVC
13 configuration information from the second message to be selectively
14 stored into the first portion of a PVC configuration information storage
15 means that is designated for the first logical sub-interface in a manner that
16 indicates that the updated PVC configuration information is the most

17 recent PVC configuration information for the first logical sub-interface
18 received from the network device.

1 18. The apparatus as recited in Claim 15, wherein the request generator means is
2 further configured to:
3 format the request for PVC configuration information stored in the network
4 device into a request in a first format for PVC configuration information
5 stored in the network device; and
6 segment the request in the first format into a plurality of formatted request
7 segments.

1 19. The apparatus as recited in Claim 18, wherein the first format is SNMP.

1 20. The apparatus as recited in Claim 18, wherein the first format is AAL5.

1 21. The apparatus as recited in Claim 18, wherein at least one of the plurality of
2 formatted request segments comprises an ATM cell.

1 22. The apparatus as recited in Claim 15, wherein the request includes an ILMI getrequest
2 command in SNMP format.

1 23. The apparatus as recited in Claim 15, wherein the request includes an ILMI getnext
2 command in SNMP format.